5090
Ser T4E2GM/L3386

19 JUL 1993

Mr. Tom Lanphar
Department of Toxic Substances Control
700 Heinz Ave., Suite 200
Berkeley, CA 94710

Subj: RESPONSES TO COMMENTS ON DRAFT FIELD SAMPLING PLANS FOR THE FOLLOW-ON FIELD WORK FOR PHASES 2B/3 AND 5/6 SITES AT NAS ALAMEDA

Dear Mr. Lanphar:

We are providing as enclosures (1) and (2), responses to yours and the Regional Water Quality Control Board's comments on the draft Field Sampling Plans (FSP) for the Follow-on Field Work for the Phases 2B/3 and 5/6 sites at NAS Alameda.

We are placing an item for discussion of the Navy's responses to your comments as part of the agenda for our monthly Progress Review meeting to be held in your offices on July 28, 1993. If you have any immediate questions regarding our responses to your comments, please contact either Mr. Gary J. Munekawa, Code T4E2GM, (415) 244-2524 or Mr. George Kikugawa, Code T4E2GK, (415) 244-2559.

Sincerely,

Original signed by:
MARCELO PASCUA, JR.
By direction

Encls:
(1) Responses to Comments on Draft FSP for Follow-on Field Work Phases 2B & 3
(2) Responses to Comments on Draft FSP for Follow-on Field Work Phases 5 & 6 (including RWQCB Comments)

Copy to:
California Regional Water Quality Control Board (Attn: James Nusrala)
US Environmental Protection Agency (Attn: Julie Anderson)
NAS Alameda (Attn: LT Mike Petouhoff)
PRC Environmental Management, Inc. (Attn: Duane Balch)
James M. Montgomery, Consulting Engineers, Inc. (Attn: Ken Leung)

Blind copy to:
T4E2, T4E2GM, T4E2GK, Admin Record (3 copies)
WRITER; Gary J. Munekawa/T4E2GM/x2524
TYPIST: Gary J. Munekawa, L3386
FILE: Alameda/NAS, Chron, Blue, Pink, Green

965

RESPONSE TO DTSC COMMENTS
Phases 2B and 3 Draft Follow-On Field Sampling Plan

This document presents the Navy's response to comments received from the State of California Environmental Protection Agency Department of Toxic Substances Control (DTSC) on June 10, 1993. The responses will be incorporated in the text of the final Phases 2B and 3 Follow-On Field Sampling Plan (FSP). The DTSC comments are presented verbatim in bold typeface. The Navy responses follow in normal typeface.

General Comments

COMMENT #1: Page 3-1, Section 3.1, Physical Description and Site History:
The first paragraph should clarify that Site 4 of Phases 2B and 3 now includes all of Building 360..

RESPONSE: The text will be changed to clarify the point.

COMMENT #2: Page 3-6, Section 3.6.1, Soil Sampling and Figure 3-1:
The last sentence of the second bullet item states that borings will be located near the center of each wall of the building; however, Figure 3-1 locates the borings near the corners of the building.

RESPONSE: The text will be changed to reflect the fact that the borings are to be located near the corners of the building.

COMMENT #3: Page 3-6, Section 3.6.1, Soil Sampling, Second Bullet Item:
Please identify what the soil samples will be analyzed for. When analyzing for TPH, BTEX must be included in the analysis. This is because BTEX is important in calculating risk associated with petroleum. BTEX should be included in the analysis of all samples tested for TPH.

RESPONSE: The soil samples collected from the four borings (B04-21 through B04-24) will be analyzed for VOCs including BTEX, SVOCs, TPH-purgeable, TPH-extractable, metals, and cyanide, as stated in the FSP (see Table 13-1, page 1). These four boring locations are in paved areas so surface samples will be analyzed for VOCs. Unpaved surface samples collected from under the building (bullet item 3) will not be analyzed for VOCs. Unpaved surface soil samples are generally not analyzed for VOCs because exposure of the surface soil to the atmosphere has likely resulted in volatilization of VOCs.

COMMENT #4: Page 3-6, Section 3.6.1, Soil Sampling, Third Bullet Item:
SVOCs should be included in the analysis for soil borings under the building.

RESPONSE: SVOCs were included in Table 13-1, but were inadvertently left out of the text. They will be added to the text in Section 6.6.1.

COMMENT #5: Page 3-7, Section 3.6.2, Cone Penetrometer:
SVOC and TPH have been found in the groundwater at Site 4. For this reason, SVOC and TPH should be included in the analysis of groundwater.

RESPONSE: TPH-purgeable and TPH-extractable were included in Table 13-1, but were inadvertently left out of the text. These analyses will be added to the text in Section 3.6.2. SVOCs will be added to the analyte list.

COMMENT #6: Page 3-8, Section 3.6.3, Shallow Monitoring Wells:
SVOC and TPH have been found in the groundwater at Site 4. For this reason, SVOC and TPH should be included in the analysis of groundwater.

RESPONSE: SVOCs, TPH-purgeable, and TPH-extractable were included in both the text and Table 13-1.

COMMENT #7: Page 4-6, Section 4.7.1, Soil Sampling:
The VOC 111, Trichloroethane was measured at 39,000 µg/kg in the sample collected at 14 feet bgs from B05-11. The Sampling Plan, however, suggest samples be taken from only 2.5 and 5 feet bgs. Soil samples should be collected at a depth similar to where contamination was found in B05-11.

RESPONSE: Groundwater at this site is approximately 6 to 8 feet below ground surface (bgs). Therefore, the sample collected at 14 feet bgs was in saturated soil. Saturated soil samples are not representative of soil conditions because the reported concentration includes both compounds sorbed to the soil particles and compounds dissolved in the groundwater found in the soil pore spaces. We propose to collect only unsaturated soil samples during this investigation. A groundwater monitoring well will be installed downgradient of boring B05-11 to assess the VOCs detected in groundwater.

COMMENT #8: Figure 5-2, Site 6, Geologic Cross Section A-A', B-B':
An explanation for "GW" is absent from the legend. Please add "GW" to the legend.

RESPONSE: "GW" is a well graded gravel. The symbol will be added to the figure legend.

COMMENT #9: Page 6-5, Section 6.6.1, Soil Samples, Second Bullet Item:
SVOCs were also detected in M07A-02 at 7 feet. For this reason, SVOCs should be included in the analysis.

RESPONSE: We believe the SVOCs detected at depth in boring M07A-02 are part of the basewide polycyclic aromatic hydrocarbon (PAH) phenomenon related to the historical use of the property by the Pacific Coast Oil Works (see Section 16 of the final Phases 2B and 3 Data Summary Report [DSR]). There is sufficient site-specific soil data to characterize the distribution of PAH at this site, even without this soil sample. Basewide, there is sufficient soil data available to perform a risk assessment on the subsurface PAH. Therefore, no additional SVOC analysis is proposed for the soil samples collected at Site 7A.

COMMENT #10: <u>Page 6-7, Section 6.6.5, Non-Point Source Sampling:</u>
Please explain the function of the grease trap within the storm drain system. How often is sludge removed for the grease traps? Has the grease been tested before? What were the results?

RESPONSE: No grease trap was discovered while field checking the non-point source locations for Site 7A. Neither service station personnel nor NAS Alameda Environmental Office personnel had information regarding the suspected grease trap. It is possible the original drawings were in error.

COMMENT #11: <u>Page 9-2, Section 9.4.1, Soil:</u>
Is there evidence to suggest that bis(2-ethylhexyl)phthalate may have been introduced in the sampling process?

RESPONSE: Bis(2-ethylhexyl)phthalate is used in the manufacturing of numerous plastic products including PVC. Decontamination water is routinely purchased in plastic "sparkletts-like" water bottles. Plastic buckets are used to clean sample equipment. Gloves may contain the compound. Many fittings, tubing, and other equipment used at analytical laboratories may contain bis(2-ethylhexyl)phthalate. It is likely that the single bis(2-ethylhexyl)phthalate detection in soil at Site 10A is related to one of these sources. Based on laboratory quality control criteria the single detection was qualified as an estimate.

COMMENT #12: <u>Page 9.3, Section 9.5.3, Shallow Monitoring Wells:</u>
Has the source for the VOCs and SVOCs detected in Well M10-01 been identified?

RESPONSE: Based on the soil sample results from Site 10A, the VOCs and SVOCs detected in well M10-01 are not believed to come from Site 10A. Site 5 is the most likely source for these compounds. Soil and groundwater samples at Site 5 contain all of the compounds found in the groundwater from Well M10-01. Site 5 is crossgradient of Site 10A.

COMMENT #13: <u>Page 9.3, Section 9.5.3, Shallow Monitoring Wells and Figure 9-3:</u>
Because the direction of groundwater beneath Site 10A is towards the east, there is no down-gradient well at Site 10A. A fourth monitoring well should be installed north of building in order to provide for a down-gradient sampling point.

RESPONSE: A fourth monitoring well north of the building is not desirable. The proposed well location is proximal to Site 5 where there is documented groundwater contamination. We believe this contamination is already detected in well M10-01. Furthermore, the proposed DTSC location is not downgradient of Site 10A, see Figure 9-3 in the Phases 2B and 3 FSP.

COMMENT #14: **Page 10-1, Section 10.0, Site 12 - Building 10, Power Plant:**
This site contains three abandoned Underground Storage Tanks (USTs) and one white gas UST. Apparently, the USTs will be handled under the UST Program. However, the USTs may be a source for contamination at Site 12. If the tanks have been investigated under the UST Program the results should be summarized in this Sampling Plan.

Additional investigations of the USTs may be necessary at Site 12. The occurrence BTEX in the soil and groundwater must be determined. This would require at least one down-gradient monitoring well and three soil borings near the three abandoned USTs. The white gas UST must also be adequately investigated. This would require at least two soil boring, with one being converted into a down-gradient monitoring well.

RESPONSE: There are five abandoned USTs (filled with sand) on the north side of Building 10 and an abandoned "white gas" UST (empty) on the south side of Building 10 (abandonment occurred prior to 1984). As part of Navy's Pollution Abatement Program, investigation of these vessels and their proper closure and/or removal are being coordinated with Alameda County Department of Environmental Health (DEH) personnel. On June 2, 1991, the Navy submitted a final closure plan to the county which addressed removing the white gas UST, and ensuring the proper closure of the USTs on the north side of Building 10. On June 2, 1993, Alameda County issued permits to perform the closure work and associated investigation of the soil and groundwater around the abandoned USTs.

Field work started on June 28, 1993. Ten soil borings were drilled around the USTs on the north side of Building 10, and four soil samples were collected from the tank pit of the white gas UST (which was removed). Grab groundwater samples were also collected at six of the 10 soil borings and one from the white gas UST tank pit. Preliminary analytical results indicate that the north side UST soils were mostly clean with only three soil samples having up to 39 mg/kg motor oil. At the white gas UST tank pit, the only hydrocarbon detections in soil was total xylenes at 16 micrograms per kilogram (ug/kg), and motor oil at 60 milligrams per kilogram (mg/kg). Grab groundwater analyses were nondetect for TPH and BTEX at the white gas UST. At the north side USTs one grab groundwater sample had 3.7 milligrams per liter (mg/L) motor oil. Benzene levels in the groundwater on the north side were reported in three grab samples at levels up to 2 ug/L (only one sample at this level), and a single sample with detections of toluene, ethylbenzene, and total xylenes at 2 ug/L each.

Based on field conversations with Alameda County DEH personnel during the investigation, no groundwater monitoring wells were requested. After the closure report is submitted and reviewed by Alameda County DEH, the Navy is prepared to generate a soil sampling and groundwater monitoring plan, if requested by the County, to characterize the extent of affected soil and groundwater.

Based on the preliminary data reported for the tank closure investigation, the Navy does not propose to change its approach for sampling activities at Site 12 (no additional shallow monitoring wells). The Navy will, however, coordinate with Alameda County to address data concerns once the tank closure report has been submitted and reviewed. A copy of the existing final closure plan will be forwarded to the DTSC, and as the data become available, a copy of the tank closure report will also be forwarded to the DTSC. This data will not be incorporated in the Phases 2B and 3 Follow-On FSP.

COMMENT #15: <u>Page 11-2, Section 11.3, Site Geology/Hydrogeology:</u>
The configuration of the groundwater table during low and high tide as shown in Figure 11-4 and 11-5 are different than the configurations shown in Figure 13-3 and 13-4 of the Final Data Summary Report for Phases 2B and 3. What conclusions can be made about the direction of groundwater flow at Site 14?

RESPONSE: While responding to this comment, errors were discovered in both the tidal influence study analysis and original DSR water level contour maps for Site 14. The tidal study errors involved the surveyed top of casing data for wells M14-02 and M14-03 and the initial depth to water data for both wells. Well M14-01 remained unchanged. The data have been corrected, and new maps and calculations are included with these responses. The data for the other tidal influence study sites are currently being checked. Any changes in the data will be made in the CTO 0121 final DSR Background and Tidal Influence Studies/Additional Work at Sites 4 and 5 document and the results will be changed accordingly.

The surveyed top of casing information for wells M14-02 and M14-03 were transposed in the original DSR water level contour maps for Site 14 These maps have also been corrected and are resubmitted with these responses.

The corrected tidal influence data indicate that all three wells exhibit tidal influence. During low tide, flow at Site 14 is towards the Inner Harbor, with a hydraulic gradient of approximately 0.012 foot per foot (fpf). At high tide, the groundwater flow direction is away from the Inner Harbor, with a hydraulic gradient of approximately 0.013 fpf. The high and low tide maps are now consistent between the DSR and the tidal influence study. The average groundwater flow direction for the site is southwest (away from the Inner Harbor), under an extremely low hydraulic gradient of approximately 0.00068 fpf (nearly flat).

COMMENT #16: <u>Page 11-3, Section 11.5.1, Soil Sampling, First Bullet Item and Locations of Soil Boring on Figure 11-1:</u>
The selection of soil boring locations should more closely relate to the data gathered during the soil gas survey. Borings should be taken where the highest soil gas levels were located. For example; the three locations where soil gas was measured at 140 µg/L, 130 µg/L, and 180 µg/L.

RESPONSE: Within the constraints of drilling access, the sampling locations will be moved slightly to better approximate the high soil gas locations.

COMMENT #17: <u>Page 11-3, Section 11.5.1, Soil Sampling, First Bullet Item:</u>
Soil analysis should include SVOCs, PAH, BTEX, and dioxin/furan.

RESPONSE: VOCs (which includes BTEX) were proposed in the original analyte list. SVOCs have not been proposed because only one soil sample out of the twelve collected during initial work at the site contained significant concentrations of PAH. Two others contained PAH near the detection limit. The Navy believes that sufficient data exist to characterized PAH in the soil at this site. Dioxin/furan sampling is discussed under the second bullet item (see response to Comment #18).

COMMENT #18: Page 11-3, Section 11.5.1, Soil Sampling, Second Bullet Item:
Soil analysis should also include SVOCs, PAH, and BTEX.

RESPONSE: SVOC analyses are not proposed because the Navy believes that sufficient SVOC data have been collected for the RI/FS work at this site (see response to Comment #17). BTEX analyses are not proposed because these surface samples are to be collected from unpaved areas (see response to Comment #3). A total of six surface samples are proposed for dioxin/furan analysis, three originally in the FSP (S14-1, S14-3, and S14-6, see Table 13-1, page 16), and three other samples will be added. Analysis for dioxin/furan will be added to the three surface samples from borings B14-4, B14-8, and B14-9.

COMMENT #19: Page 11-4, Section 11.5.3, Shallow Monitoring Wells:
According to Figures 11-3 and 11-4, the direction of groundwater during low-tide is due north, while during high-tide the direction is due east. The average direction, however, is toward the north-west. The placement of groundwater monitoring wells does not satisfactorily take into account the changing direction of groundwater. Therefore, a forth monitoring well is needed north-west of the Fire Training Area.

RESPONSE: The current monitoring well network is sufficient to measure the average flow at the site. See response to Comment #15.

COMMENT #20: Page 12-2, Section 12.5.1, Soil:
The discussion on soil contamination failed to include the SVOC contamination occurring at the surface in the southern section of Site 15. The highest concentrations of SVOC at the surface are found near Building 283. The section also failed to identify the location of the soil sample collected at 2 feet bgs that contained SVOCs.

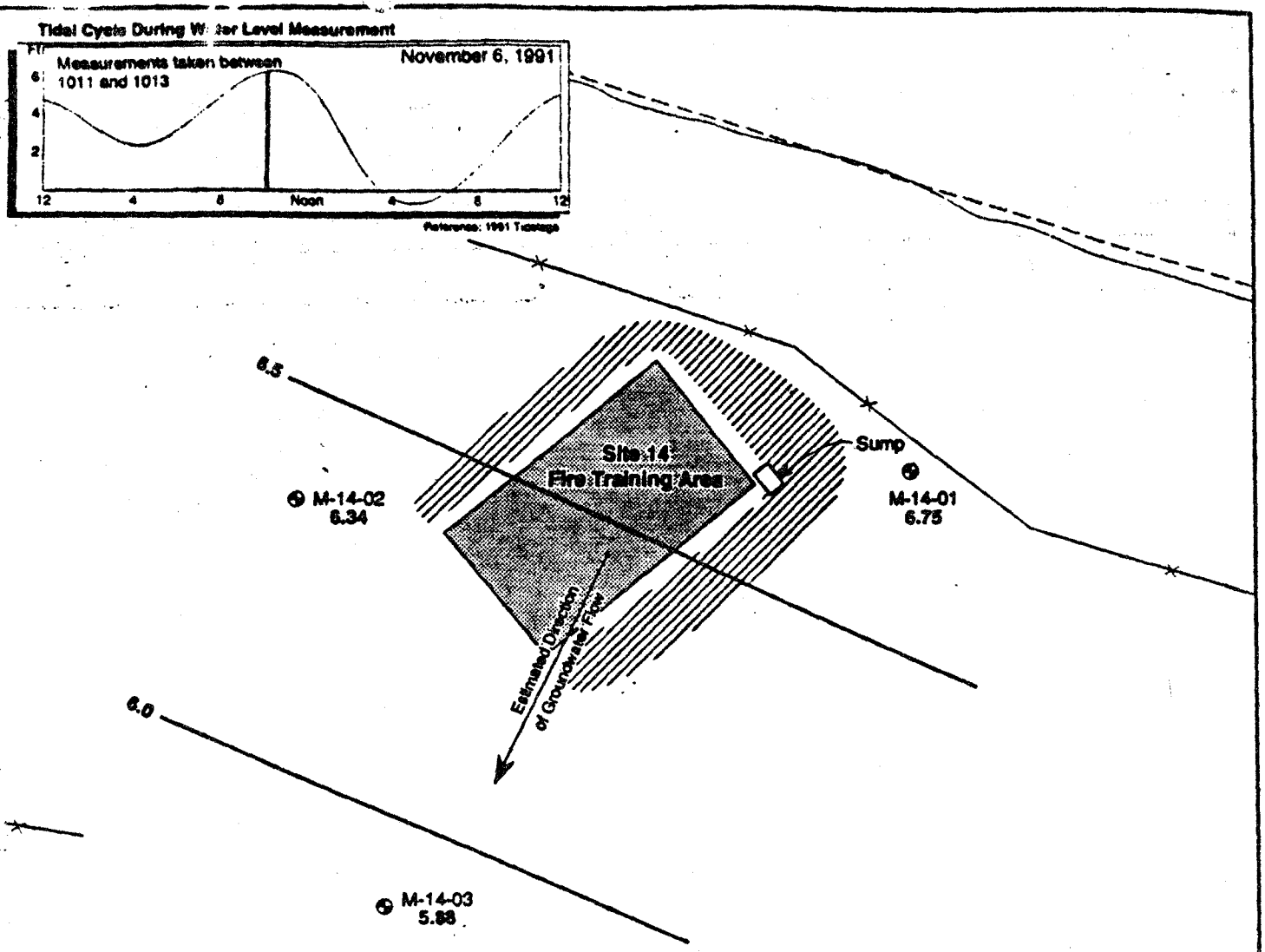
RESPONSE: The discussion will be changed to include the PAH contamination occurring in the southern section of the site and the location of the 2 feet bgs sample that contained PAH.

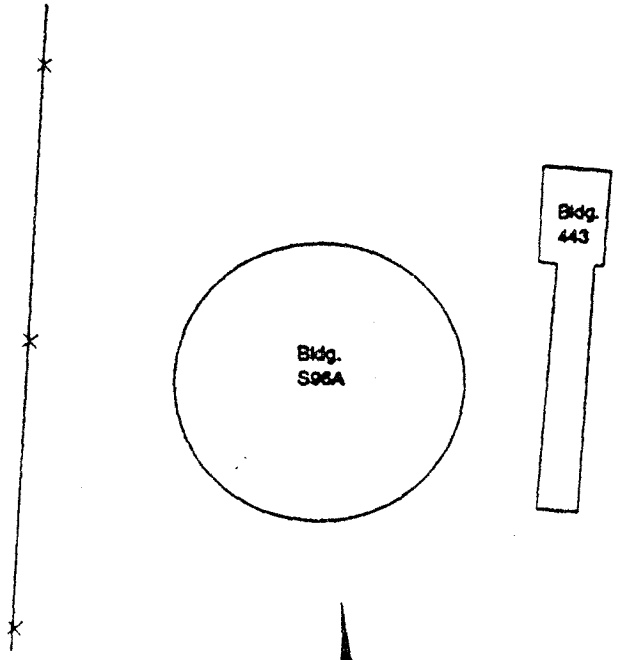
COMMENT #21: Page 12-3, Section 12.6.1, Soil Sampling:
The occurrence of SVOC in the soil must be further investigated and the source of the SVOCs needs to be identified. Surface sample S15-12 should be recollected and reanalyzed because of the high detection limit reported in the Final Data Summary Report Phases 2B and 3.

RESPONSE: SVOCs are included in the proposed analyte list for the additional surface soil samples. Surface soil sample S15-12 will not be recollected because we believe there are sufficient surface soil data in that portion of the site to perform a risk assessment and/or removal action. Existing and additional samples are collected on a grid system with sample locations approximately 30 feet apart. Consequently, at the end of this field effort there will be eight samples collected within 45 feet of S15-12. Furthermore, pesticide/PCB levels detected in S15-12 make it likely that the location will be included in the excavation for the planned interim removal action at Site 15.

COMMENT #22: **Page 14-2, Section 14.1.5, Soil Sample Retrieval and Handling: Soil Samples that are to be sent to the laboratory for analysis should not be field screened for VOCs.**

RESPONSE: Three stainless steel sleeves are collected from each split spoon. The sleeve from which the VOC analysis will be performed will not be field screened or disturbed. It will be capped promptly and chilled. Field screening will be performed on another sleeve from the sample. The text in the plan will be changed accordingly to clarify this fact.





LEGEND:

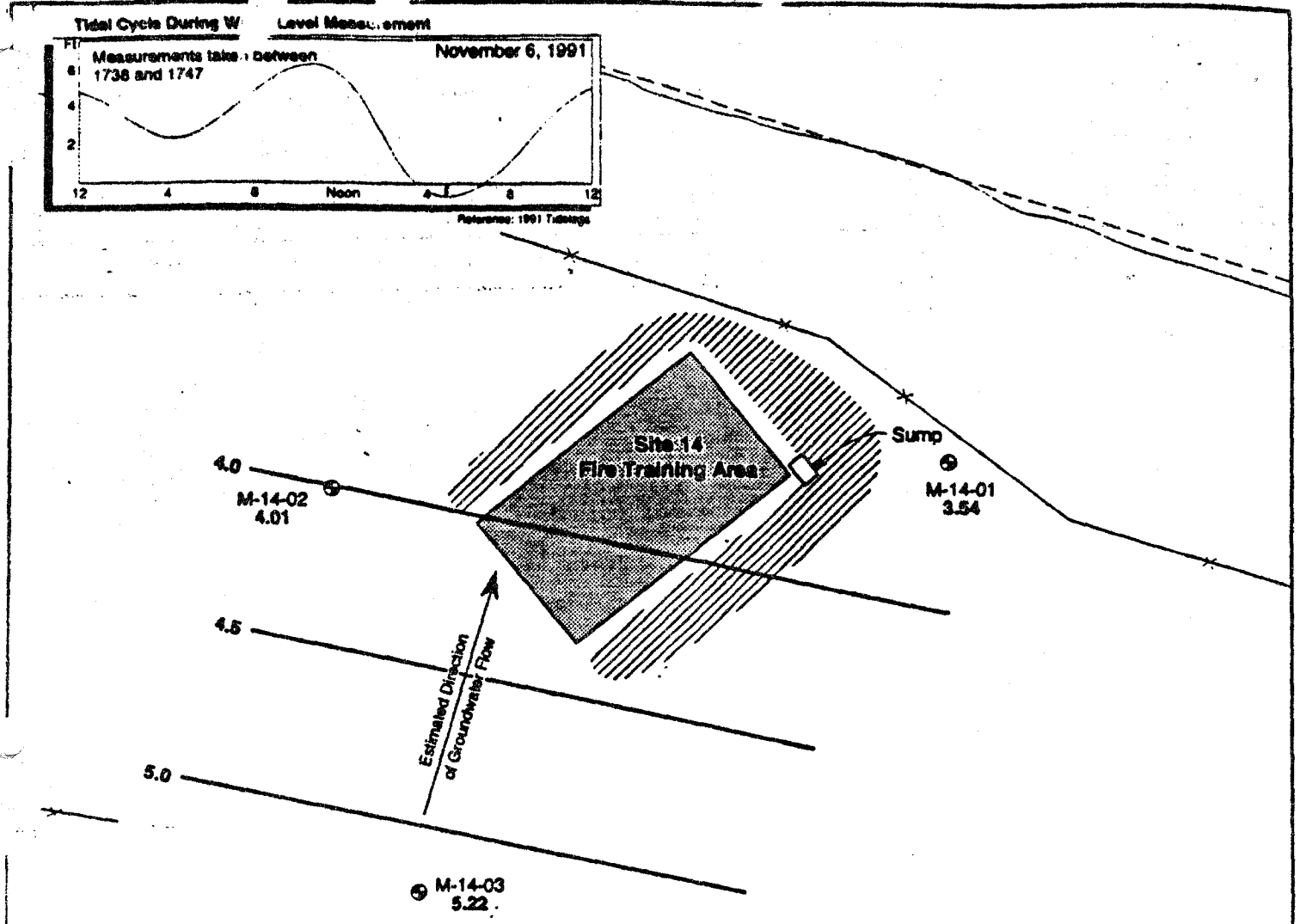
- 6.75 Monitoring Well Location — Groundwater elevation in feet above mean low low water
- FireTraining Area Containment Berm
- Concrete Slab
- Bldg. 443 Structure
- Fence

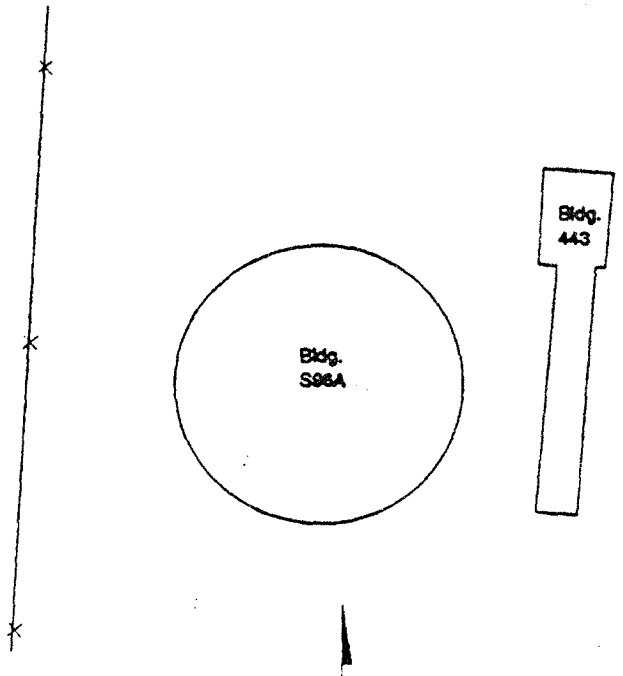
Notes:
1) JMM Soil boring locations surveyed by Notte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD file provided by NAS Alameda

0 20 40
SCALE IN FEET

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 14
GROUNDWATER CONTOUR MAP
NOVEMBER 6, 1991, MORNING

FIGURE 13-3





LEGEND:

- 5.01 Monitoring Well Location — Groundwater elevation in feet above mean low low water
- FireTraining Area Containment Berm
- Concrete Slab
- Bldg. 443 Structure
- Fence

Notes:

1) JMM Soil boring locations surveyed by Notte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD file provided by NAS Alameda

0 20 40
SCALE IN FEET

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 14
GROUNDWATER CONTOUR MAP
NOVEMBER 6, 1991, EVENING

FIGURE 13-4

RESPONSE TO DTSC COMMENTS
Phases 5 and 6 Draft Follow-On Field Sampling Plan

This document presents the Navy's response to comments received from the State of California Environmental Protection Agency Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (RWQCB). The responses will be incorporated in the text of the final Phases 5 and 6 Follow-On Field Sampling Plan (FSP), for Sites 1 and 2 and the Runway Area. The DTSC and RWQCB comments are presented verbatim in bold typeface. The Navy responses follow in normal typeface.

Comments by Department of Toxic Substances Control
Dated: June 11, 1993

SPECIFIC COMMENTS

Comment No. 1: **Page 3-7, Section 3.6.1, Soils**

The analysis of soils in the burn area should include polycyclic aromatic hydrocarbons (PAHs) which are by-products of incomplete combustion.

RESPONSE: Five surface soil samples were collected during the solid waste water quality assessment test (SWAT) data summary report (DSR) investigation in the burn area and no PAHs were detected in these samples. No additional PAH analyses are proposed for the follow-on work.

Comment No. 2: **Page 3-7, Section 3.6.1, Soils**

The initial investigation of Site 1 was also conducted under Phase 1 of the Remedial Investigation (RI). The Phase 1 investigation is concluded and information collected during that phase will be incorporated into Phases 5 and 6. On March 4, 1993, the DTSC provided comments on the Phase 1 and 2A Data Summary Report. The Data Summary Report included recommendations for future work at Sites 1 and 2. This future work is to be accomplished through the continuation of Phases 5 and 6. Relevant comments on the Phases 1 and 2A Data Summary Report must be incorporated into the Phases 5 and 6 Follow-on Field Sampling Plan.

RESPONSE: These recommendations have been incorporated into the final Phases 5 and 6 Follow-On FSP.

Comment numbers 13 and 14 of the March 4, 1993 comment letter addresses soil sampling at site 1. These comments are repeated and should be addressed in the Phases 5 and 6 Field Sampling Plan.

Comment No. 2a: **Phases 1 and 2A DSR Comment No. 13: "Because of the lack of fully validated surface samples, confirmatory sampling is required for surface soils at Site 1. Ten random samples must be collected at locations where there was no detection of semivolatile organic compounds, pesticides, PCB compounds, TRPH, and total organic carbon."**

RESPONSE: The final Phases 5 and 6 Follow-On FSP will include collection of ten samples for semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH)-purgeable and extractable, and total organic carbon (TOC) analyses.

Comment No. 2b: **Phases 1 and 2A DSR Comment No. 14: "Surface soil contamination is concentrated in the triangular area west of Runway 13-31. Another 200 foot grid sampling even should occur within this area. Sampling locations should be between the points already sampled by Canonie. This would provide sampling locations every 100 feet. Conducting surface sampling in this area will augment the data already gathered in the area and provide a fully validated data set. Soil samples collected in or near the burn area must be analyzed for dioxens."**

RESPONSE: As agreed in our June 30, 1993 meeting additional surface soil samples will be collected where elevated concentrations of chemicals were detected in the triangular area of Site 1, but the samples will not be collected on a 200-foot grid spacing. We propose approximately 15 additional surface soil sampling locations in the triangular area west and north of the runways. This additional sampling will augment the data already gathered. The new data will be fully validated for the Remedial Investigation/ Feasibility Study (RI/FS) report. Samples collected within the burn area will be analyzed for dioxin-furan.

Comment No. 3: Page 3-7, Section 3.6.1, Soils and Figure 3-2

A five point sampling grid will be employed to explore for the presence of dioxin-furan in the burn area of Site 1. According to Figure 3-2, three of these five sampling points are not within the burn area. Please explain the selection of these sampling points, including why all the samples will not be taken from the burn area. Soil sampling should occur at the burn area and in areas where contamination may have been transported.

RESPONSE: These three points will be moved to within the burn area on Figure 3-2.

Comment No. 4. Page 3-7, Section 3.6.1, Soils and Figure 3-2

Are the twelve soil borings proposed for Site 1 shown on Figure 3-2? What are they identified as?

RESPONSE: There are 13 boring locations not 12; the text will be changed to reflect the correct number of borings. The borings are designated on Figure 3-2 as M-28C, M-30A, M-30E, M-30C, M-31A, M-31E, M-31C, M-32A, M-33A, M-34A, M-35A, and two that are not shown. Borings B-36 and B-37 will be drilled in the burn area. The two borings in the burn area will be located at the two surface sample locations where the highest concentrations of dioxin-furan are detected.

Comment No. 5. Page 3-7, Section 3.6.1, Soils

Please support the decision not to analyze surface samples for dioxin-furan a second time. Will soil samples from the 2.5 and 5 foot intervals be analyzed for dioxin-furan?

RESPONSE: Once the surface soil samples from the burn area are analyzed, the locations of the borings will be chosen as stated in the response to DTSC Comment No. 4. Analyzing these same locations a second time will not add significantly to the data. Two duplicate samples are recommended presently for confirmation purposes. The 2.5- and 5-foot samples will be analyzed for dioxin-furan, as stated in Table 6-1, page 2 (B-36 and B-37).

Comment No. 6. Page 3-8, Section 3.6.2, Cone Penetrometer Tests

In order to better comprehend the extent of the bay mud under Site 1, CPT numbers 1-1, 1-2, 1-4 and 1-5 should be taken closer to the eastern side of the 1943-1946 landfill.

RESPONSE: We plan to keep the cone penetrometer testing (CPT) points in their current locations. We are looking for the eastern extent of the Holocene Bay Mud Unit east of the disposal cells at Site 1. If the Holocene Bay Mud Unit is not encountered in these locations, CPT points to the west (closer to the disposal cells) will be added. Site 1 is the 1943-1956 Disposal Area, not the 1943-1946 landfill.

Comment No. 7. Page 3-8, Section 3.6.3, Groundwater

A third well cluster of three wells should be added to the two well clusters to be installed on the east side of the disposal cells between M-030 and M-031. This third well cluster should be made up of "A", "E", and "B".

RESPONSE: A third well cluster of A, E, and C wells would need to be on the asphalt fringe of Runway 13-31. The two proposed well clusters (M-30 and M-31) on the upgradient side of the disposal cells should give adequate coverage. The two proposed well cluster locations can be adjusted to maximize their coverage. An additional upgradient well cluster is not necessary at this time, but will be reconsidered after review of data from the two proposed well clusters.

Comment No. 8. Page 4-6, Section 4.4.3.2, Surface Water and Groundwater (last paragraph)

Is there evidence which indicates that acetone, methylene chloride, and bis(2-ethylhexyl)phthalate are laboratory contaminants or sampling artifacts?

RESPONSE: As stated in the SWAT DSR these compounds were detected in some trip blanks, equipment blanks and method blanks. The origin of the acetone, methylene chloride, and phthalate may be due to laboratory or sampling artifacts. The National Functional Guidelines for Organic Data Review, United States Environmental Protection Agency (USEPA) Contract Laboratory Program, document revised June 1991 lists acetone and methylene chloride as common laboratory contaminants (page 19).

Bis(2-ethylhexyl)phthalate is used in the manufacturing of numerous plastic products including polyvinyl chloride (PVC). Decontamination water is routinely purchased in plastic "sparkletts-like" water bottles. Plastic buckets are used to clean sample equipment. Gloves may contain the compound. Many fittings, tubing, and other equipment used at analytical laboratories may contain bis(2-ethylhexyl)phthalate. Since all these plastics are used in the field or the laboratory, the phthalates could be a sampling artifact.

Comment No. 9. Page 4-8, Section 4.6.2, Cone Penetrometer Tests

Please clarify what is meant by "in the area between the landfill operations on the south side of Site 2."

RESPONSE: The sentence will be changed to read "in the area south of the landfill operations between well M-18A and well M-15A . . ."

Comment No. 10. Page 4.8, Section 4.6.2, Cone Penetrometer Tests and Figure 4.1

The text states that four CPT locations with an approximate spacing of 600 feet between test points will be driven at Site 2. Figure 4-1 shows CPT locations to have a spacing greater than 600 feet. Understanding the extent of the bay mud aquitard under the West Beach Landfill is extremely important. More CPT location should be included at Site 2. With CPT locations between WB-3 and M-014B, M-014B and M-013C, and M-013C and M-012B.

RESPONSE: The text will be changed to reflect that the 600 foot spacing is referring to deep sampling points previously installed and proposed sampling points, not all new points. The present spacing of the two CPT locations on the south side of Site 2 is approximately 800 feet. A third CPT location will be added to this area, between wells M-18A and M-15A, to decrease the spacing to approximately 600 feet. There are currently five wells and one boring (M-10B, M-12B, M-13C, M-14B, M-105B, and boring WB-3) drilled into the second water-bearing zone on the east side of Site 2. The density of deep borings in the area between boring WB-3 and well M-12B is adequate for assessing the lateral extent of the Holocene Bay Mud Unit.

Comment No. 11. Page 4-8, Section 4.6.3, Groundwater

The southern and eastern boundaries of Site 2 do not have any "E", "B", or "C" wells; therefore, the bottom of the upper water-bearing zone and the second water-bearing zone have not been sampled in these areas. The HydroPunch II should be enlisted to collect samples from the upper and lower portions of the first water-bearing zone and from the base of the second water-bearing zone in these areas. The Navy should be prepared to install "E", "B", and "C" type groundwater monitoring wells if the Hydropunch samples detect contamination.

RESPONSE: Well M-18E is on the south side of Site 2 and groundwater samples from this well did not indicate contaminants were migrating in this direction. There are four "B" and "C" wells on the east side of Site 2. None of the groundwater samples from these wells had significant concentrations of chemicals. HydroPunch® samples are proposed to be collected from the base of the fill and at the top and bottom of the second water-bearing zone. Two wells (one "E" and one "B") will be added in the vicinity of wells M-16A and M-15A, on the south side of Site 2. The Navy will review whether additional "E", "B", or "C" wells are required, if HydroPunch® samples collected from this area contain detectable levels of chemicals of concern. Results of the review will be discussed with DTSC and the RWQCB.

Comment No. 12. Page 4-8, Section 4.6.3, Groundwater

Even if contamination is not detected in the HydroPunch II samples, the Navy should install "E", "B", and "C" wells at M-016. These additional wells will allow for continued monitoring of the lower portions of the first and second water-bearing zones.

RESPONSE: "E" and "B" wells will be added in the vicinity of wells M-16A and M-15A. This will allow for monitoring of the lower portion of the first water-bearing zone and the top of the second water-bearing zone. See response to DTSC Comment No. 11.

Comment No. 13. Page 4-8, Section 4.6.3. Groundwater

The greatest concentration of contaminants in the groundwater at Site 2 was detected in monitoring wells M-024-A and M-024-E. In order to determine the quality of groundwater in the second water-bearing zone beneath M-024 an additional "C" monitoring well should be added to the M-024 well nest.

RESPONSE: There is approximately 40 feet of clay material between the fill and the second water-bearing zone at well cluster M-24. The thickness of the clay material to the north, at well cluster M-25, is 28 feet and to the south, at well cluster M-23, is 47 feet. The quarterly groundwater samples from deep wells M-23B and M-25C had one detection each of bis(2-ethylhexyl)phthalate (2.3 micrograms per liter [µg/L] and 3.0 µg/L, respectively) Well M-23B had chloroform detected at a concentration of 1.1 µg/L, in one groundwater sample. These compounds are suspected laboratory or sampling artifacts. Migration of chemicals from the first water-bearing zone to the second water-bearing zone through this thickness of clay material is unlikely. Therefore, no additional "C" well is recommended at this time.

Comment No. 14. Page 5-3, Section 5.4.1. Soils

Is there evidence which indicates that acetone and bis(2-ethylhexyl)phthalate are laboratory contaminants or sampling artifacts?

RESPONSE: See response to DTSC Comment No. 8.

Comment No. 15. Page 5-5, Section 5.5. Sampling Objectives (forth bullet)

Will the new soil samples be analyzed for TPH purgeable and extractable?

RESPONSE: These samples (SS2-1 through SS2-6) will be analyzed for TPH purgeable and extractable; see Table 6-1, page 10 of the FSP.

RESPONSE TO RWQCB COMMENTS
Phases 5 and 6 Draft Follow-On Field Sampling Plan

Comments by California Regional Water Quality Control Board
Dated: June 7, 1993

GENERAL COMMENTS

Comment No. 1: **More soil borings and monitoring wells are needed in the Site 1 disposal area and West Beach Landfill. This is necessary to classify the waste and volume in the landfills as well as to determine the quality of the groundwater which is in direct contact with the waste. This information will all be taken into account in the feasibility study for selecting appropriate closure methods for the landfills.**

RESPONSE: Additional soil borings and wells are proposed at Sites 1 and 2. No wells are proposed to be drilled into the landfills. Drilling through landfills is not recommended for these two sites due to the types of the wastes (e.g. waste chemical drums, low-level radiological waste, industrial strippers and cleaners, asbestos, inert ordnance, and waste medicines and reagents) buried in them.

It is the Navy's position that based on data previously collected and discussed in the Phases 1 and 2A DSR, and in the Phases 5 and 6 SWAT DSR, the sampling program proposed in the Phases 5 and 6 Follow-On FSP will provide data sufficient for supporting future closure and post-closure maintenance activities to be proposed for both landfill sites. Following subsequent analysis of the follow-on data the Navy will propose capping, containment, and monitoring following USEPA guidance for landfills under CERCLA, and following federal NCP guidance.

The Navy does not believe that further characterization within the landfill sites is warranted or desirable. EPA guidance indicates that characterization of landfill contents is generally not necessary because containment of the landfill contents, which is often the most practicable technology, does not require such information. In addition, drilling through the landfills presents not only logistical problems (the presence of an active aircraft runway and wetlands environmental impact), but also health-based problems due to the presence of the waste types listed above.

A monitoring system using the existing and proposed wells will adequately assess potential leachate migration, and information from the monitoring system will be used to design an appropriate pump and treat/extraction system, if necessary. Given the lithological and hydrological information already gathered and to be gathered as proposed, it is not necessary to know with certainly if the first and second water-bearing zones are in hydraulic continuity within the landfills themselves as a sufficient density of monitoring wells will be in place to monitor all potentially affected zones.

Sufficient historical data exist to allow for a reasonable estimation of the approximate thickness of the landfill contents, allowing for design of an appropriately engineered landfill cap.

Comment No. 2: **Please explain why so many Cone Penetrometer Tests (CPTs) were taken in the Runway Area.**

RESPONSE: The CPT locations in the Runway Area are proposed to help determine the areal extent of the Bay Mud Unit and the paleochannel that runs east to west across the island. This will help in understanding the hydrogeology of the site.

Comment No. 3: **More figures are recommended to show the sample locations and corresponding contamination for all detected chemicals for both the first and second water-bearing zone in the final RI/FS report.**

RESPONSE: This will be taken into consideration when the final RI/FS report is being prepared.

Comment No. 4: **A radiologic survey needs to be included in the chemical analysis for the monitoring wells and soil borings which are part of the follow-on-field work sampling plan.**

RESPONSE: The soil samples from all new borings and the groundwater from all wells are proposed to be analyzed for radionuclides; see Table 6-1 of the FSP.

SPECIFIC COMMENTS

Comment No. 1: **(Section 2.2.2) Please explain what chemical constituents will be detected in each of the four groundwater zones sampled: A, B, C, and E.**

RESPONSE: This question is unclear. If the question is what chemical constituents have been detected in the A, B, C, and E wells, that data is in the SWAT DSR and in the Phases 1 and 2A DSR. If the question is what chemical constituents are proposed for the follow-on work, that information is in the Phases 5 and 6 Follow-On FSP. Section 2.2.2 of the FSP concerns the observed occurrence of groundwater at Sites 1 and 2, not the chemical constituents.

Comment No. 2: **(Section 2.4) Is the report trying to use the fact that there are differences in how the two water-bearing zones respond to tidal fluctuations as proof of no hydraulic connection between the two? If so, that is a very indirect way of making a conclusion that the fill and native soil aquifers are not in communication with each other. A better way would be to look at the lithology, by drilling borings or CPT holes in the area of concern, or by performing pumping tests.**

RESPONSE: The SWAT DSR used the information from the tidal influence study in conjunction with the lithologic data to support the conclusion that along the western edge of the landfills the first water-bearing zone and the second water-bearing zone are not in communication. The aquitard unit of the Holocene Bay Mud Unit is up to 47 feet thick along the west side of Site 2; this supports the conclusion that the zones are not in communication. Although the tidal influence study data is indirect, it bolsters the conclusion that the zones are not communicating, and this is a reasonable interpretation of the data. The Navy has proposed in the Phases 5 and 6 Follow-On FSP to conduct a CPT investigation at Sites 1 and 2 and the Runway Area to further evaluate the lithology between the first and second water-bearing zones. This new information will give direct evidence of potential communication between the two zones.

Comment No. 3: **(Figure 2-4) Figure 2-4 estimates the geology in the West Beach Landfill. There is no proof that the Holocene Bay Mud Unit exists at a 15-20 foot thickness throughout the site.**

RESPONSE: The lines connecting the units between the wells are dashed to indicate this is one possible interpretation of the data.

Comment No. 4: **(Figure 2-6) Figure 2-6 shows the A, E, B, and C wells sampling the top and bottom of the artificial fill and native soil aquifers. No well logs or rationale were provided for us to evaluate if such monitoring is adequate to determine preferential pathways. Each of the five zones in Figure 6 needs to be properly monitored. The two assumed aquitards, the Holocene Bay Mud Unit and the Late Pleistocene Esturarine Deposits, especially require extensive soil borings or CPTs to see if they are in fact, low permeable zones preventing vertical migration of**

contaminants. Borings WB-2 and M-013C in Figure 2-4 show that the Bay Mud Unit consists of SM, a sandy material, which is fairly permeable. Borings M-007C and DA-2 show the same phenomenon.

RESPONSE: Mark Malinowski of the DTSC, reviewed and concurred with the original work plans for Sites 1 and 2, and the PRC report "Naval Air Station Alameda, California Hydrogeology and Proposed Changes for Phase 5 of the RI/FS" March 14, 1991, which altered the drilling program at the landfill sites (Malinowski, March 20, 1991).

Additional soil borings, wells, and CPT are proposed in the FSP for Sites 1 and 2 to evaluate the stratigraphy of the area, in particular the fill material, the Holocene Bay Mud Unit, the late Pleistocene/Holocene Alluvial/Eolian Deposits, and the Late Pleistocene Estuarine Deposits. The additional CPT and boring information gained through the implementation of the Phases 5 and 6 Follow-On FSP will help to determine if preferential pathways exist.

An SM is a silty sand, sand-silt mixture with non-plastic fines. Fifty percent of the material making up the sample has to be larger than a U.S. standard series No. 2 sieve (grains down to 0.005 inch in size). More than half of the coarse fraction of the sample must be larger than a U.S. standard series No. 4 sieve (grains larger than 0.25 inch in size). The other 50 percent of the total sample can be composed of fine material (silt and clay). If the majority of the fine fraction is silt then it is an SM. The Canonie sample from 27 feet in boring DA-2 was logged as an SP/SM and has a measured average permeability of 3.18E-05 cm/sec. The sample from 41 feet in boring DA-2 was logged as an SP/SM and has a measured average permeability of 1.73E-06 cm/sec to 7.0E-07 cm/sec. The sample from 46.5 feet in boring WB-3 was logged as an SM and has a measured average permeability of 3.25E-07 cm/sec. An SM can have a wide range of permeabilities. Therefore, a soil classified as an SM does not necessarily indicate that the soil is fairly permeable.

Comment No. 5: **(Figure 3-2) Two more well clusters are needed directly east and north of the 1947 disposal "cell" so we can better define the groundwater contamination pathways. Also, the well clusters should sample the B zone, or the top of the Late Pleistocene Estuarine Deposits. This way the wells could detect chemicals which would float to the top of the second water-bearing zone.**

RESPONSE: There are presently two well clusters proposed on the east side of the disposal cells at Site 1. An additional well cluster will be added to the north side of Site 1, in the vicinity of well M-003A. See response to DTSC Comment No. 7 regarding the third well cluster on the east side of Site 1.

Comment No. 6: **(Figure 3-2) Additional characterization of the waste contained in the 1947 and 1949 disposal "cells" is necessary. The main goal of an RI/FS for a landfill site such as the Site 1 disposal area is to characterize the site in a way that would suggest possible remedial options. Soil borings in the landfill are necessary to classify and determine the thickness of the refuse and the lithology underneath them. Underlying groundwater should also be monitored to define the vertical extent of contamination. Information on leachate quality and quantity is necessary to estimate how long it will take to dewater the refuse or to design a pump and treat system for the leachate, if necessary.**

RESPONSE: See response to RWQCB General Comment No. 1.

Comment No. 7: **(Table 3-1) Please identify the sample depths, if possible, for the water samples. Also, why are TPH and Pesticides/PCBs not proposed to be analyzed in all of the groundwater samples?**

RESPONSE: The sample depths for the groundwater samples correspond to the well designation. "A" wells are screened at the top of the fill material. "E" wells are screened at the base of the fill material. "B" wells are screened at the top of the second water-bearing zone. "C" wells are screened at the base of the second water-bearing zone. See Figure 2-6 in the Phases 5 and 6 Follow-On FSP.

TPH and pesticides/PCBs are not proposed for analyses in all groundwater samples because they were not detected in every well in the first year of groundwater sampling. Wells that had these compounds detected previously at elevated concentrations are proposed for continued sampling and analyses.

Comment No. 8: **(Table 3-1) Why are the deep wells analyzed only on a semi-annual basis when there are so few to begin with?**

RESPONSE: We propose sampling deep wells on a semi-annual basis because nondetect to low concentrations of chemicals were detected during the previous four quarters of groundwater sampling. If elevated levels of contaminants are detected in future groundwater sampling of the deep wells, the frequency of sampling of the deep wells will be reevaluated and modified as necessary.

Comment No. 9: **(Section 4.4.3.2, page 4-7) A detection limit of 200 ppb was used in the SWAT report for sampling TPH in the groundwater. In future analysis Regional Board staff would like to see a detection limit of around 10 ppb. This is the Practical Quantification Reporting Limit given in the Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites. (Ca. Regional Water Quality Control Board San Francisco Bay Region, August 1990, page 19)**

RESPONSE: The method used in the SWAT DSR investigation was total recoverable petroleum hydrocarbons (TRPH) not TPH. The Tri-Regional Board Staff Recommendation for detection of TRPH is 5,000 parts per billion (ppb) in water and for TPH is 50 ppb in water not 10 ppb. Attempts will be made to achieve these recommended detection limits, though they are recommendations for underground storage tank sites (USTs) not landfills.

Comment No. 10: **(Section 4.4.3.2, page 4-7) Please explain what existing information indicates that groundwater from the first water-bearing zone is not migrating downward to the second water-bearing zone near wells 22 to 24.**

RESPONSE: See response to DTSC Comment No. 13 and RWQCB Specific Comment No. 2.

Comment No. 11: **Why are groundwater samples in the B and C zone only going to be analyzed twice a year, instead of four times a year, when there are so few well locations to begin with?**

RESPONSE: See response to RWQCB Specific Comment No. 8.

Comment No. 12: **(Section 4.6.2) Four CPT locations on the perimeter of the West Beach Landfill are not enough to access whether or not the first and second water-bearing zones are hydraulically connected beneath the landfill. More CPT holes are needed in the landfill itself.**

RESPONSE: Additional CPT locations will be added to the south side of Site 2; see responses to DTSC Comments No. 11 and 12. Drilling is not recommended in landfills; see response to RWQCB General Comment No. 1.

Comment No. 13: **(Section 4.6.2) If Cone Penetrometer Tests are to tell whether or not the first and second waterbearing are hydraulically connected they need to be installed in the landfill itself.**

RESPONSE: See response to RWQCB General Comment No. 1.

Comment No. 14: **(Section 4.6.3) TPH needs to be analyzed in all monitoring wells. It was detected in wells 21A, 22A, 23A, 24A, 22E, and 24E in the September 1992 SWAT report.**

RESPONSE: TRPH were detected at low concentrations in these wells during the first year of groundwater sampling and analyses. Groundwater samples from new wells are proposed to be analyzed for TPH. Analyses of TPH will be added to water samples collected from wells M-21A, M-22A, M-23A, M-24A, M-22E and M-24E.

Comment No. 15: **(Figure 4-2) Again, I want to see more soil borings and monitoring wells sampling the landfill itself. The landfill must be characterized before any remedial options can be suggested. For instance, if a cover is to be used one would need to know the thickness of the refuse so as to design for compression of the landfill accordingly. Also, if the leachate or contaminated groundwater is to be treated, one would need to know what chemicals are contained in the leachate and groundwater, so as to include all necessary methods in the treatment plant.**

RESPONSE: See response to RWQCB General Comment No. 1.

Comment No. 16: **(Figure 2) There needs to be some more deep aquifer wells on the south side of West Beach Landfill. There is no knowledge of the contamination in the native soil water-bearing zone from wells 15 through 18. It is important to characterize the contamination here as it borders San Francisco Bay.**

RESPONSE: See responses to DTSC Comments No. 11 and 12.